Irrigation Revenue Report of the Bombay Presidency (excluding Sind)

For the Year 1927-28

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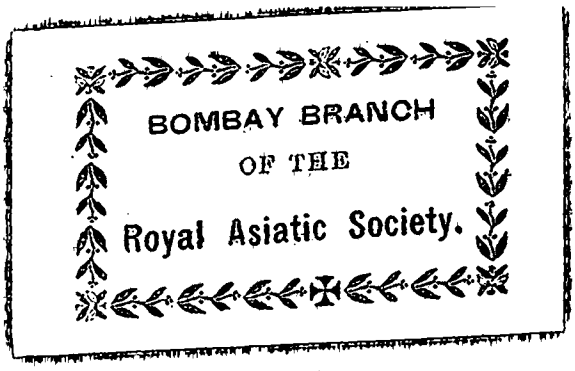

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Collectorate	Number	Names of Works	Area of four months' crops which could be irrigated in normal years with a duty at the head of the canal of 120 acres for the monsoon season and 120 acres for the rabi season per cusec	Whether supply is reliable or dependent on local rain	Storage works completed or proposed	Remarks
			Acres			
		Unproductive —*contd.*				
Poona ..	7	Nira Canal including Shetphal Tank.	86,400	Reliable ..	Lake Whiting, Lloyd Dam completed.	Ghat catchment.
Sholapur ..	8	Mhaswad Tank.	14,000	Dependent on local rain.	Completed ..	Deccan catchment
Ahmedabad ..	9	Hathmati and Khari Cut Canals.	24,000	Do. ..	No storage work. Bokh reservoir and Chandola tank and Wasai reservoir completed.	The catchment of the Hathmati river is hilly, covered partly with forest and that of Khari is undulating ground at its source and then plain ground with cultivated fields. Supply depends upon the flow in the rivers, and the contents of the Bokh reservoir and the Chandola tank and Wasai reservoir.
West Khandesh.	10	Lower Panjhra River Works.	8,178	Panjhra river supply not reliable.	Mukti tank completed.	Ghat catchment for one part and Deccan catchment for the rest.
Nasik ..	11	Kadva River Works. Palkhed Canal. Ojhar Tambat Canal.	6,600	Reliable ..	Waghad tank completed.	Ghat catchment.
		Wadali Canal.	1,080	... ..	No storage proposed.	
Poona ..	12	Mutha Canals including Matoba Tank.	40,000	Reliable ..	Lake Fife completed.	Do.
Sholapur ..	13	Ekruk Tank..	13,070	Dependent on local rain.	Completed ..	Deccan catchment.
Satara ..	14	Krishna Canal.	6,412	Reliable ..	Proposed ..	Ghat catchment.

Collectorate	Number	Names of Works	Area of four months' crops which could be irrigated in normal years with a duty at the head of the canal of 120 acres for the monsoon season and 120 acres for the rabi season per cusec	Whether supply is reliable or dependent on local rain	Storage works completed or proposed	Remarks
			Acres			
		Unproductive —*contd.*				
Kaira ..	15	Wangroli Tank.	3,400	Dependent on local rain.	Completed ..	Ordinary catchment on plain ground and cultivated fields.
	16	Tranza Nagrama Tanks.	800	Do. ..	Do. ..	The Tranza tank has no independent catchment. The Nagrama tank has a catchment of 1·5 sq. miles. Both are fed by the Matar drainage channel which is not reliable as it seldom flows.
	17	Savli Tank ..	3,000	Do. ..	Do. ..	Ordinary catchment on undulating ground.
	18	Salat Tank ..	2,000	Do. ..	Do. ..	Ordinary catchment on flat ground.
Panch Mahals ..	19	Futelao Tank.	800	Do. ..	Do. ..	Hilly catchment.
East Khandesh.	20	Hartala Tank.	978	Do. ..	Do. ..	Deccan catchment.
	21	Mhaswa Tank.	3,256	Do. ..	Do. ..	Do.
	22	Jamda Canals.	42,000	Girna River supply not reliable.	Storage tanks on the Girna, the Manad and the Panjan Rivers under contemplation. Water is issued from the Chankapur Tank when available.	Ghat catchment for a small part and for the rest Deccan catchment.
Nasik ..	23	Parsul Tank.	1,440	Dependent on local rain.	Completed ..	Deccan catchment.
Ahmednagar ..	24	Bhatodi Tank.	1,461	Do. ..	Do. ..	Do.
Poona ..	25	Kasurdi Tank.	40	Do. ..	Do. ..	Do.
	26	Shirsuphal Tank.	1,150	Do. ..	Do. ..	Do.
	27	Bhadalvadi Tank.	1,225	Do. ..	Do ..	Do.

Collectorate	Number	Names of Works	Area of four months' crops which could be irrigated in normal years with a duty at the head of the canal of 120 acres for the monsoon season and 120 acres for the rabi season per cusec	Whether supply is reliable or dependent on local rain	Storage works completed or proposed	Remarks
		Unproductive —*concld.*	Acres			
Sholapur ..	28	Koregaon Tank.	416	Dependent on local rain.	Completed ..	Hilly catchment.
	29	Ashti Tank ..	3,382	Do. ..	Do. ..	Deccan catchment.
	30	Pathri Tank ..	3,004	Do. ..	Do. ..	Hilly catchment.
Satara ..	31	Rewari Canal.	439	Do. ..	*Nil* ..	Deccan catchment.
	32	Upper Man River Works.	373	Do. ..	Pingli Tank completed.	Do.
	33	Yerla River Irrigation Works.	1,182	Do. ..	Nehr Tank completed.	Do.
	34	Chikhli Canal .	358	Do. ..	*Nil* ..	Do.
	35	Maini Tank ..	455	Do. ..	Completed ..	Do. Supply from catchment is good.
Bijapur ..	36	Muchkundi Tank.	750	Do. ..	Do. ..	Deccan catchment.
Belgaum ..	37	Gokak Canal, 1st Section.	17,627	Reliable ..	27 feet completed.	Ghat catchment.
Dharwar ..	38	Dambal Tank.	531	Dependent on local rain.	Completed ..	Deccan catchment.
	39	Medleri Tank.	231	Do. ..	Do. ..	Do.
	40	Madag Tank.	1,418	Do. ..	Do. ..	Ghat and forest catchment.
	41	Asundi Tank.	303	Do. ..	Do. ..	Deccan catchment.
	42	Dharma Canal.	For monsoon season 6,530 acres. For rabi *nil*.	Do. ..	No storage works. The canal takes off from the river itself.	Forest catchment.
Poona, Satara, Sholapur and Phaltan State.	43	Nira Right Bank Canal.	180,000	Reliable ..	Lake Whiting, Lloyd Dam completed.	

"Budhihal, Gokak Canal Survey, Victoria Tank and the Suki River Project are not included in this report as they are not in operation.

Interest Account.

2. The interest account for the year stands as follows :—

	Amount		
	Productive Works	Unproductive Works	Total
	Rs.	Rs.	Rs.
Total interest charges during 1927-28 ..	5,759	39,20,108	39,25,867
Net Revenue realised during 1927-28 ..	10,488	20,51,548	20,62,036

Net Loss.—Difference between interest and net revenue Rs. 13,63,831.

3. The gross revenue realised from all sources during the year after deducting refunds of revenue (Rs. 14,293) was Rs. 36,63,481 of which Rs. 36,41,533 were direct and Rs. 21,948 indirect receipts. The net revenue actually realised was Rs. 20,62,036. The gross revenue and the net revenue show an increase of Rs. 6,29,142 and Rs. 5,58,157 respectively when compared with the figures for 1926-27.

Area under Command and irrigable area.

4. The gross area under command was 1,872,879 acres and the area irrigable at present is 626,919 acres.

5. The financial results of the year by main heads were as under :—

	Area irrigated	Revenue realised			Working expenses	Net revenue
		Direct receipts	Share of land revenue	Total		
	Acres	Rs.	Rs.	Rs.	Rs.	Rs.
Productive	2,965	7,193	10,245	17,438	6,950	10,488
Unproductive ..	245,257	36,34,340	11,703	36,46,043	15,94,495	20,51,548
Total ..	248,222*	36,41,533	21,948	36,63,481	16,01,445	20,62,036

Area irrigated, etc.

6. The figures of area irrigated, revenue assessed and realised and working expenses as compared with those of the previous ten years, are given below :—

Year	Area irrigated	Revenue		Working expenses
		Assessment	Realisation	
	Acres	Rs.	Rs.	Rs.
1917-18	138,623	17,75,865	15,42,847	7,77,313
1918-19	203,040	22,94,781	12,72,404	8,45,275
1919-20	236,325	17,72,480	19,26,047	8,65,642
1920-21	264,699	24,41,998	22,98,132	9,23,280
1921-22	251,392	24,08,118	25,61,905	11,23,639
1922-23	278,202	26,25,308	25,45,285	10,19,409
1923-24	258,054	28,47,586	24,64,925	11,23,776
1924-25	261,625	28,42,975	26,83,004	14,45,498
1925-26	289,823	31,05,708	28,25,691	15,65,065
1926-27	263,321	35,61,623	30,34,339	15,30,460
Average ..	244,510	25,67,644	23,15,457	11,21,935
1927-28	239,379	35,11,724	36,63,481	16,01,445

*Includes 8,843 acres on which consolidated water and land assessment is levied.

There was a decrease of 23,942 acres in the total area irrigated as compared with the previous year. The variation in each Circle is given below :—

The Deccan Irrigation, Irrigation Development and Research and Southern Circles showed a decrease of 25,900, 5,061 and 2,058 acres respectively due to timely and favourable rainfall.

The Northern and Central Circles showed an increase of 7,878 and 1,199 acres respectively.

7. The state of the collections was as follows :—

	Rs.	Rs.
Balance of demands unrealised at the commencement of the year		16,81,332
Demands of the year :—		
Rabi 1926-27	10,56,489	
Kharif 1927-28	23,90,994	
Miscellaneous receipts	3,81,181	38,28,664
Total ..		55,09,996
Deduct—		
Remissions		2,092
Net total ..		55,07,904
Amount unrealised at the close of the year		18,47,242
	Rs.	
Actual receipts of the year	36,55,826	
Add—		
Share of land revenue	21,948	36,77,774
Deduct—		
Refunds of revenue		14,293
Revenue realised as per paragraphs 3, 5 and 6 ..		36,63,481

The remissions and refunds together amounted to Rs. 16,385. The amount unrealised at the close of the year amounted to Rs. 18,47,242 and it exceeds the amount in arrears at the close of the previous year by Rs. 2,47,819. The largest amount was outstanding in the Deccan Irrigation Circle. The total is made up as follows :—

	Rs.
Hathmati and Khari Cut Canals	96,071
Wangroli Tank	1,938
Savli Tank	4,252
Bhatodi Tank	2,055
Ekruk Tank	17,312

	Rs.
Ashti Tank	8,681
Krishna Canal	62,252
Lower Panjhra River Works	2,019
Gokak Canal First Section and Storage Works ..	13,579
Dharma Canal	5,053
Mhaswad Tank	18,608
Kadwa River Works	6,713
Chankapur Tank	8,295
Godavari Canals	5,64,214
Pravara Canals	4,48,019
Parsul Tank	2,690
Mutha Canals including Matoba Tank ..	1,44,996
Nira Left Bank Canal and Shetphal Tank ..	3,41,935
Nira Right Bank Canal	86,988
Bhadalwadi Tank	1,566
Other works	10,006
Total ..	18,47,242

A portion of this amount has already been recovered since the close of the year and steps have been taken to recover the balance.

Working expenses.

8. The working expenses for the year amounted to Rs. 16,01,445 against Rs. 15,30,460 in the previous year showing an increase of Rs. 70,985.

9. The following table contrasts the charges under the principal heads with those of the previous two years :—

——	1925-26	1926-27	1927-28
	Rs.	Rs.	Rs.
Works	55,886	66,376	65,471
Repairs	5,33,159	5,26,701	6,09,152
Establishment	7,00,538	8,30,794	10,25,925
Tools and Plant	39,382	13,954	19,836
Total in the Public Works Department ..	13,28,965	14,37,825	17,20,384
Collection charges	1,32,135	86,706	—1,25,695
Indirect charges	1,03,965	5,929	6,756
Total working expenses ..	15,65,065	15,30,460	16,01,445

Details of working expenses.

10. The following table gives the details of the working expenses of some of the principal works :—

Name of work	Average incidence of water rate per acre	Cost of measurement		Working expenses total in the Public Works Department excluding indirect charges	
		Total cost	Per acre	Per mile of main canal	Per acre irrigated
	Rs.	Rs.	Rs. a. p.	Rs.	Rs.
Nira Left Bank Canal and Shetphal Tank.	13·87	2,370	0 0 8	2,564	3·75
Pravara Canals ..	26·53	713	0 0 6	2,854	13·74
Girna Left Bank Canal.	8·34	543	0 1 10	3,576	10·85
Godavari Canals ..	19·24	838	0 0 6	2,643	11·80
Mutha Canals and Matoba Tank.	15·78	1,473	0 1 7	1,672	9·89
Kadwa River Works	13·89	204	0 1 3	3,155	29·11
Gokak Canal 1st Section.	6·54	1,692	0 2 9	211	1·10
Dharma Canal ..	6·71	304	0 12 2	87	5·90
Krishna Canal ..	10·11	931	0 2 4	662	3·68
Yerla River Irrigation Works.	4·38	643	0 2 2	2,402	17·31
Rewari Canal ..	4·11	104	0 2 7	287	2·53
Upper Man River Works.	3·75	253	0 2 5	255	2·74
Chikhli Canal ..	3·48	74	0 2 8	195	2·89
Jamda Canals ..	4·36	138	0 1 8	273	7·90
Mhaswad Tank ..	7·16	104	0 0 3	242	2·31
Madag Tank ..	4·70	4	0 0 2	209	4·60
Ekruk Tank ..	6·64	66	0 0 3	749	9·14
Ashti Tank ..	5·58	50	0 0 3	544	3·68
Maini Tank ..	3·49	337	0 2 3	406	1·60
Asundi Tank ..	7·57	5	0 1 1	241	16·29

Gross assessed revenue.

11. The gross assessed revenue, direct and indirect, as shown in statement IV-C accompanying the Irrigation Administration Report for 1927-28 was Rs. 35,11,724 against Rs. 35,61,623 of the previous year. The details of the gross assessment were as follows :—

	Direct revenue			Indirect revenue	Total
	Water rates	Other receipts	Total		
	Rs.	Rs.	Rs.	Rs.	Rs.
Productive ..	5,001	240	5,241	10,245	15,486
Unproductive ..	31,03,594	3,80,941	34,84,535	11,703	34,96,238
Total ..	31,08,595	3,81,181	34,89,776	21,948	35,11,724

12. The net assessed revenue of the year after deducting working expenses, including indirect and other charges, was Rs. 19,10,279 as compared with Rs. 20,31,163 in 1926-27.

Net assessed revenue.

13. The following table shows the percentage return earned on capital outlay on some of the principal works in operation :—

Name of work	Total capital outlay (direct and indirect)	Gross receipts (direct and indirect)	Working expenses (direct and indirect)	Net revenue	Percentage on capital outlay (column 2)
	Rs.	Rs.	Rs.	Rs.	
Hathmati and Khari Cut Canals.	13,18,729	43,474	58,408	—14,934	....
Lower Panjhra River Works ..	4,68,621	24,868	14,441	10,427	2·23
Krishna Canal	9,49,807	52,192	21,518	30,674	3·23
Ekruk Tank	13,40,386	1,35,111	23,306	1,11,805	8·34
Ashti Tank	8,41,708	26,946	13,060	13,886	1·65
Maini Tank	4,96,330	7,340	3,290	4,050	0·81
Kadwa River Works ..	10,35,876	48,523	73,213	—24,690	....
Pravara River Works ..	1,50,07,692	8,28,613	3,23,937	5,04,676	3·36
Godavari Canals	1,03,10,220	6,73,126	2,88,182	3,84,944	3·73
Mutha Canals including Matoba Tank.	65,50,461	3,70,523	1,30,224	2,40,299	3·67
Nira Left Bank Canal and Shetphal Tank.	1,16,78,288	10,15,004	2,32,585	7,82,419	6·70
Chankapur Tank-Girna Left Bank Canal.	20,56,431	39,753	63,550	—23,797	....
Mhaswad Tank	20,96,016	48,696	12,062	36,634	1·75

14. The water rates in force during the year and the authority sanctioning them are shown in statement I-F accompanying the Irrigation Administration Report for 1927-28.

Water rates.

15. The average water rates per acre of land actually irrigated were :—

	Rs.
Productive works	5·19
Unproductive works	13·02

16. The water rate assessments and other receipts compare with those of the previous year as under :—

	1926-27	*1927-28*
	Rs.	Rs.
Water rates	31,48,908	31,08,595
Other Receipts—		
Plantations	19,032	12,463
Water power	14,313	14,313
Miscellaneous	3,58,950	3,54,405
Total ..	3,92,295	3,81,181
Share of land revenue	20,420	21,948
Total ..	4,12,715	4,03,129
Grand Total ..	35,61,623	35,11,724

Crop acreages.

17. The principal crop acreages irrigated during 1926-27 and 1927-28 were as follows :—

	1926-27	1927-28	Difference
	Acres	Acres	Acres
Gardens and orchards	4,598	4,660	+62
Sugarcane	39,753	42,578	+2,825
Wheat	17,469	16,036	—1,433
Rice	9,806	18,445	+8,639
Maize	5,077	4,104	—973
Jowar	86,675	62,408	—24,267
Bajri	24,006	20,430	—3,576
Gram, etc.	16,862	9,336	—7,526
Groundnut	13,205	17,189	+3,984
Condiments	7,315	6,841	—474
Cotton	11,049	9,206	—1,843
Fodder crops	4,002	4,622	+620

The total estimated value is shown as Rs. 3,15,80,366 against Rs. 4,00,65,186 in the previous year and Rs. 4,40,15,206 in the year 1925-26. These estimated crop values are only approximate as there is no uniform method of estimating them.

18. In statement I-E accompanying the Irrigation Administration Report for 1927-28 the duty of water on each work as well as the basis on which the duties were calculated, etc., are shown. The results vary with the nature of the crops irrigated, perennial crops requiring much more water than cereals. To obtain a correct comparative result it is necessary to consider the area of each class of crop grown under the canals concerned. Statement G affords means for such a comparison.

DETAILED REPORTS BY LOCAL OFFICERS.

AHMEDABAD AND KAIRA AND PANCH MAHALS DIVISIONS.

Works without storage and dependent on local rain.

HATHMATI AND KHARI CUT CANALS.

19. The area irrigated, net assessment, average water rate and working expenses on these canals compare with the average of the three preceding years as under :—

Year	Kharif		Rabi		Total		Average water rate assessed per acre	Working expenses
	Area irrigated	Assessment	Area irrigated	Assessment	Area irrigated	Assessment		
	Acres	Rs.	Acres	Rs.	Acres	Rs.	Rs.	Rs.
Average	3,999	22,714	1,375	2,924	5,374	25,637	4·49	44,742
1927-28	14,534	92,983	5,071	14,001	19,605	1,06,984	5·46	63,183

20. Besides the usual himayat deduction of Rs. 4,414, a remission of Rs. 400 was granted on account of failure of crops partly due to the disease named 'geru', which badly affected the wheat plants and partly due to over-flooding of some low-lying survey numbers caused by excessive rain.

21. The gross revenue realised from all sources amounted to Rs. 43,491. It is less than the working expenses by Rs. 19,692 and shows a loss of 1·6 per cent on the total capital outlay exclusive of interest. When the interest charges during the year (*viz.*, Rs. 41,411) are taken into account, the loss works out to 4·6 per cent on the capital cost of the Hathmati and Khari Cut Canals combined. This result is due to (*a*) the non-recovery of water rates for the Kharif season and (*b*) the heavy working expenses, *viz.*, Rs. 63,183, against Rs. 59,414 of the previous year and Rs. 44,742, the average of the past three years. The increase in the working expenses was due to the extra amount of Rs. 12,398 spent on certain urgent extensions and improvements and Rs. 77,787 spent on repairing the damage caused by the floods of 1927.

22. The realisations amounted to Rs. 43,491 against Rs. 23,556 of the previous year. A large sum of Rs. 96,078 remained unrealised at the end of March. Out of this amount a sum of Rs. 36,342 including a rabi collection of Rs. 14,001 was subsequently realised. The outstanding balance of Rs. 73,737 is expected to be recovered during the year 1928-29.

23. The rainfall gauged at Himatnagar at the head of the Hathmati Canal was 50·64 inches in the kharif and 0·35 inches in the rabi season; and at Raipur at the head of the Khari Cut Canal it was 75·38 inches in the kharif and 0·87 inches in the rabi season.

Works with storage tanks dependent on local rainfall.

24. The area irrigated, net assessment, and working expenses under the Wangroli, Savli, Saiat, Tranza Nagrama and Futelao tanks compare with the average of the previous three years as under :—

Name of Tank	Year	Kharif		Rabi		Total		Working expenses
		Acres.	Rs.	Acres	Rs.	Acres	Rs.	Rs.
Wangroli ..	Average ..	837	3,919	365	1,160	1,202	5,077	8,977
	1927-28 ..	1,175	5,715	214	862	1,389	6,577	8,003
Savli	Average ..	822	3,151	508	1,098	1,329	4,248	5,646
	1927-28 ..	1,426	5,899	..	..	1,426	5,899	7,789
Saiat	Average ..	449	1,644	230	854	679	2,498	4,459
	1927-28 ..	120	254	..	..	120	254	14,530
Tranza Nagrama ..	Average ..	30	110	27	61	56	171	2,225
	1927-28 ..	119	458	38	134	157	592	4,513
Futelao	Average ..	..	..	46	128	46	128	1,407
	1927-28 ..	..	..	160	481	160	481	2,898

Wangroli Tank.

25. The tank filled to its full supply level and the water was utilised for irrigating kharif crops mainly consisting of rice and rabi crops consisting of wheat and gram. There was surplus water of the last year, which was utilised in irrigating hot weather crops before the monsoon.

26. The miscellaneous revenue from the tank amounted to Rs. 1,165 against the revenue of Rs. 1,150 of the previous year.

27. No remissions were granted during the year, but the probable loss of revenue due to exemptions amounts to Rs. 2,086 owing to the area applied for being submerged and damaged by the floods of 1927.

28. The rainfall gauged at the site of the tank was 59·52 inches.

Savli Tank.

29. The tank filled to its full supply level and the replenishment was utilised in irrigating kharif and rabi crops, mainly rice, wheat and gram.

30. The miscellaneous revenue realised amounted to Rs. 1,182 against Rs. 1,462 of the preceding year.

31. Remission of about Rs. 87-8-0 was granted due to damage caused by floods in the kharif season.

32. The rainfall gauged at the tank was 62·54 inches.

Saiat Tank.

33. There was no water in the tank either for kharif or rabi irrigation, as the tank was breached by heavy rains and floods at the end of July 1927. The surplus water of the previous year was utilised in irrigating hot weather crops consisting of Sudhia.

34. The miscellaneous revenue realised amounted to Rs. 1,185 against Rs. 1,109 of the previous year.

35. Remission of Rs. 3-14-0 was granted due to a clerical error.

36. The rainfall gauged at the tank amounted to 73·87 inches.

Tranza Nagrama Tanks.

37. The tanks filled to their full extent due to abnormal rainfall. The water was utilised for irrigating kharif and rabi crops consisting respectively of rice and wheat.

38. The miscellaneous revenue realised amounted to Rs. 1,374 against Rs. 844 of the previous year.

39. No remissions were granted during the year.

40. The rainfall gauged at the Nagrama tank was 84·40 inches; it was about the same at the Tranza tank also.

Futelao Tank.

41. The tank was empty in the early part of the year but it filled in July to its full extent owing to the abnormal rainfall. There was no kharif irrigation, but in the rabi season there was demand for water.

42. The miscellaneous revenue realised amounted to Rs. 71 against Rs. 125 of the preceding year.

43. No remissions were granted during the year.

44. The rainfall gauged at the tank was 40·76 inches.

NIRA LEFT BANK CANAL DIVISION.

Works with Ghat Storage.

NIRA LEFT BANK CANAL AND SHETPHAL TANK.

45. The average of the rainfall at Bhatgar and at the several gauging stations along the canal and at Shetphal was 26·68 inches. The monsoon in the catchment area of Lake Whiting as also in the canal tract was above the average throughout and was excellent as it was spread evenly over the whole season.

46. The level of water in Lake Whiting on 1st April was 101·40 feet above the sill of the under sluices, the corresponding contents being 10,051·25 million cubic feet. The lowest depth reached was 62·40 feet on the 2nd July, the corresponding contents being 2,023·42 million cubic feet. There was practically no replenishment in the Lake before 12th June. From that date the level of water began to rise as a result of heavy rains in the Ghats. At first an attempt was made to maintain a low level in the tank by letting out the surplus discharge through outlets and intermediate sluices between 15th June and 12th July; but after 12th July the discharge exceeded the capacity of the sluices and the level rapidly rose to 76·40 feet. The level reached the sill of the waste weir on 4th August, and owing to continuous heavy rains in the catchment the level rose to 140·20 feet on 11th August, when the waste weir gates were opened. The full supply depth of 143 feet was attained on 13th September. Vir basin began to receive sufficient replenishment from the Nira river on 13th June.

47. The draw-off from the Lake for irrigation commenced on 21st October, when the level in the Lake was 143 feet, the corresponding contents being 24,197·90 million cubic feet. On 31st March the level of water in the Lake was 122·15 feet above the sill of the under sluices, the corresponding contents being 16,461·04 million cubic feet.

48. The water in the Shetphal tank reached its lowest depth of 25·10 feet on 2nd May, the corresponding contents being 228·71 million cubic feet. Replenishment from the canal was commenced on 12th May and the water in the tank reached its full supply level of 37 feet on 24th November, the corresponding contents being 572·53 million cubic feet.

49. The following table gives the results of irrigation, revenue, etc. during the year compared with the average of the previous three years for the Nira Left Bank Canal and Shetphal Tank combined :—

Area irrigated		Assessment		Gross assessment		Working expenses		Realisations		Rainfall	
1927-28	Average	1927-28	Average	1927-28	Average	1927-28	Average	1927-28	Average	1927-28	Average
Acres	Acres	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Inches	Inches
73,109	70,923	10,12,717	8,75,086	10,24,462	8,85,628	3,04,812	2,85,014	10,15,004	7,85,734	24·38	14·93

50. The area of sugarcane and other perennial crops irrigated from the Nira Left Bank Canal and Shetphal tank together with the adsalis was 14,475 acres against 13,781 acres of the preceding year. The increase in the perennial area was due to a larger cane area as well as larger short term adsali cane area irrigated during the year. The increase was made possible by the progress made in remodelling the canal. The decrease in the total area irrigated was due to a fall in the rabi area as a result of opportune rains in the rabi season. There was very little demand for monsoon water also for the same reason. The decrease in the gross assessed revenue was due to less rabi irrigation owing to timely and sufficient rainfall. It was also partly due to less area under long term overlapping cane and cane on wells.

51. The refunds of revenue granted during the year and the remissions sanctioned amounted to Rs. 260 and Rs. 37 respectively.

52. The cost incurred on the measuring establishment for measuring 56,832 acres amounted to about 8 pies per acre against 7 pies per acre of the previous year. The remaining area of 16,277 acres which was unitised and checked during the previous year was not measured during the year under report.

53. The area of perennial blocks sanctioned and irrigated during the year amounted to 20,312 acres on the Nira Left Bank Canal and 1,257 acres on the Shetphal tank against 19,624 acres and 1,245 acres respectively of the last year. The area of 8 months blocks or rabi leases sanctioned on the Nira Left Bank Canal and Shetphal tank was about 26,298 acres and 2,803 acres respectively against 26,243 acres and 2,761 acres respectively of the previous year. The extension of perennial blocks has not been as brisk as expected owing to slump in the 'gul' rate and the general unsteadiness of the 'gul' market. There has also been practically no increase in the 8 months block area owing to very satisfactory rabi rains.

54. The designed discharge of the Nira Left Bank Canal at head as originally constructed was 456 cusecs per second and at tail 91 cusecs per second. Good progress was made on the work of remodelling the canal. The work mainly consisted of completing the strengthening and raising of banks in portions left out last year and constructing a service road along the downstream bank to facilitate inspection. This enabled an extra discharge being passed to utilise part of the extra storage at Bhatgar for irrigation purposes. The designed discharge of the Shetphal Channel is 62 cusecs per second at head. As a result of the higher discharge passed through the canal, an increased cane and other perennial area of about 2,000 acres could be irrigated. The reduced demand for rabi water, due to timely rains, was to a great extent responsible for the decrease in the revenue during the year under report.

LAKE WHITING AND MALSIRAS DIVISIONS.

The Lloyd Dam at Bhatgar and The Nira Right Bank Canal.

55. This irrigation scheme which includes the remodelled Nira Left Bank Canal will be by far the largest so far constructed in the Bombay

Deccan. Though the canal depends for its supply upon a storage 32 miles from Poona, and passes through the northern tracts of the Satara District and the Phaltan State, it mainly benefits the western portion of the Sholapur District, a tract notoriously liable to famine.

56. The old Bhatgar Dam is now submerged in the lake formed by the Lloyd Dam. The new lake impounds 24,198 million cubic feet of water and supplies the remodelled Left Bank Canal and the new Right Bank Canal, both of which take off from the pick-up weir at Vir on the Nira river, some 17 miles below Bhatgar. The Right Bank Canal ends near Mohod in the Sholapur District, the total length being about 106½ miles.

57. The works were started in 1912, and though progress during the great war was slow, better progress has been possible in recent years, and irrigation has commenced under the new Right Bank Canal from the year 1924-25. During the year under report the area irrigated was 17,045 acres, yielding an irrigation revenue of Rs. 1,23,194 and a gross assessed revenue of Rs. 1,25,349. The corresponding figures for the previous year were 26,558 acres and Rs. 1,89,163 and Rs. 1,89,357 respectively.

58. The Lloyd Dam is now completed and stores the full volume of water. During the year the parapet and road over the dam were completed. Practically all deep cuttings and high banks up to mile 106½ of the canal have been completed, with the exception of those close to a few masonry works in the Malsiras Division, which are in progress. All the masonry works down to mile 106½ have been completed except one aqueduct and some road bridges in the Mohod Sub-division, which are nearing completion. The progress on distributaries and branches is satisfactory and in accordance with the programme.

59. The distribution system is being constructed on uptodate principles, and the latest types of measuring devices are being provided at distributary heads and also at frequent intervals on the channels. Improved types of outlets and falls have been introduced, and great care has been taken as to the correct discharging capacity and efficiency of all parts of the distribution system. Designs for iron work such as gates and regulating devices have been improved and standardised, and provide arrangements for the rating and locking of all gates, outlet sluices, etc. The whole perennial area under the canal has been carefully surveyed and soil classification carried out before designing the channels, while areas unsuitable for perennial crops have been determined and indicated on the maps.

60. A large Venturi Meter with a standing wave flume below it has been constructed near the head of the new Right Bank Canal to measure and record the discharge of the main canal; and a standing wave meter flume may also be constructed at mile 51 to measure the discharges leaving the Phaltan State territory. A standing wave flume stop gate has been constructed at mile 80 to measure the discharge entering the non-perennial section of the canal.

61. The total estimated cost of the Lloyd Dam and the Nira Right Bank Canal is Rs. 4,91,10,860 inclusive of all charges. The estimated

cost of works alone is Rs. 3,83,84,335. The expenditure incurred on the works up to the end of the year under report is as under :—

	During the year	Total up to date
	Rs.	Rs.
The Lloyd Dam	1,07,204	1,35,27,028
The Nira Right Bank Canal	6,63,743	1,44,83,580
Establishment, and Tools and Plant, Suspense Account, etc.	4,17,256	74,83,315
Less receipts on capital account	— 29,414	— 1,47,971
Total ..	11,58,789	3,53,45,952

62. The Nira Valley Development Project was sanctioned by the Secretary of State for Rs. 6,85,97,828 and contains proposals for remodelling the Nira Left Bank Canal and for constructing an additional storage at Vir to supplement that in Lake Whiting, as additional storage is likely to be required when the canals are fully developed. However in view of the slump in sugarcane industry and possible economies in the use of water, it is probable that a smaller storage at Vir may suffice for many years to come.

Storage Works with Deccan Catchment.

Mhasvad Tank.

63. Though the catchment of this tank is 480 square miles, the supply is very unsatisfactory owing to the precarious character of the rainfall. On 1st April the level of water in the tank was 8·20 feet above the sill, the corresponding contents being 528·38 million cubic feet. Replenishment began in the middle of June, thus making it possible to irrigate an area of 655 and 1,615 acres during the hot weather and monsoon seasons respectively. Before the commencement of the rabi season, the level of water rose to its full height of 24 feet (the contents being 2,601·17 million cubic feet) and the waste weir began to overflow on the 26th September. This made it possible to satisfy fully the demands of the rabi season. On the 31st March the level was 18·55 feet (R. L. 1,934·25), the contents being 1,734·20 million cubic feet. As there was good rainfall in the rabi season, the crops were in good condition.

64. The average of the several rain gauge readings in the catchment was 20·61 inches, and the run-off amounted to 8,422 million cubic feet. The average rainfall in the canal tract was 26·02 inches.

65. The designed discharges of the canals Nos. I and II at head are 180·70 and 176·93 cusecs respectively with full supply depth of 4 feet, and the designed discharges at tails of the two canals are 180 and 125·76 cusecs, with 3 and 4 feet as designed depths respectively.

66. It is intended to utilise the discharge available from the existing Mhasvad canal to supplement the discharge at the tail of the Nira Right Bank Canal (Branch No. 3) when it is ready to take it. The Mhasvad Canal system will then cease to appear as a separate and independent entity and will be merged in the Nira Right Bank Canal system.

67. The following table shows the results of irrigation, revenue, etc., during the year compared with the average of the past three years :—

Area irrigated		Assessment		Gross assessment		Working expenses		Realisations		Rainfall	
1927-28	Average	1927-28	Average	1927-28	Average	1927-28	Average	1927-28	Average	1927-28	Average
Acres	Acres	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs	Inches	Inches
6,651	5,703	47,649	35,939	61,629	55,577	17,379	20,196	48,697	64,871	20·61	12·46

The increase in the area irrigated and consequent increase in irrigation assessment and gross assessed revenue from all sources is due to the fact that there was water in the tank throughout the whole year and thereby irrigation was possible in all the seasons. The decrease in realisations is due to irrigation not being done in all the seasons during the previous triennium and consequently the assessment was less. Besides much of the tank bed being under water, remissions had to be granted. The large unrealised balances have also added to the decrease to some extent.

68. There were no remissions. The refund of revenue amounted to Rs. 7.

69. The cost of the measuring establishment was 3 pies per acre against 5 pies per acre in the previous year.

MUTHA CANALS DIVISION.

Works with Ghat Storage.

MUTHA CANALS INCLUDING MATOBA TANK.

70. On 1st April the level of water in Lake Fife was 18·80 feet above the sill of the canal sluices, the corresponding contents being 1,741·46 million cubic feet. The lowest level of 8·40 feet was reached on the 14th June, the contents being 630·05 million cubic feet. Thereafter replenishment commenced, water reaching the crest of the waste weir, 26 feet above sluice sills, on the 23rd June. The draw-off from the storage commenced on the 25th October, when water was at its full supply level of 34 feet, the contents being 3,953·51 million cubic feet. On the 31st March 1928, the level was 21·55 feet on the gauge.

71. The average of the readings of the several rain gauges in the catchment of the lake (196 square miles in area) was 114·01 inches, and the run-off amounted to 46,645 million cubic feet. The rainfall in the canal tract was 25·57 inches. The monsoon commenced earlier than usual and was quite satisfactory both in the catchment and in the canal

tract, being well distributed throughout the area. The rabi rains and, especially, the late winter rains were satisfactory.

72. The Matoba Tank dried up on the 12th February, and remained empty till the 6th June, when it received a small replenishment due to local rainfall. Regular replenishment from the Mutha Right Bank Canal commenced from the 6th July and the tank reached its full supply level of 29 feet on the 14th September, the contents being 216·55 million cubic feet after deducting silt deposit. During the year the tank overflowed twice, *viz.*, from the 15th September to 2nd October and from the 6th October to 7th November. Water was issued for irrigation of monsoon and rabi crops, and after the end of the rabi season whatever surplus supply remained in the tank was issued for irrigation of perennial crops in the hot weather. The tank finally ran dry on the 11th May.

73. The designed discharges of the Mutha Right and Left Bank Canals at head are 412 and 38·5 cusecs respectively.

74. The following table gives a comparison of the results of irrigation, revenue, etc., during the year with the average of the past three years :—

Area irrigated		Assessment		Gross assessment		Working expenses		Realisations		Average rainfall of six stations	
1927-28	Average	1927-28	Average	1927-28	Average	1927-28	Average	1927-28	Average	1927-28	Average
Acres	Acres	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Inches	Inches
14,887	21,252	2,35,031	2,48,995	3,63,405	3,46,337	1,55,458	1,61,602	3,70,523	3,90,684	23·75	16·85

An area of 29 acres was indirectly irrigated by underground percolation from the Mutha Left Bank Canal, and the revenue derived therefrom was Rs. 52.

75. Due to good monsoon and rabi rains, the demand both for monsoon and rabi water was much less than anticipated, being practically nil in the former case. This resulted in a fall of the irrigated area and irrigation assessment of the Mutha Canals in spite of a small increase in the perennial area. The decrease in the area irrigated and water-rates assessed is also partly due to the introduction of unitisation, which is reported to have adversely affected the two-seasonal crop area irrigated during the year. The small increase in the gross assessed revenue is due partly to larger receipts from the Poona City Municipality and the Poona Water Works, and partly to larger receipts from sales of water and other canal produce such as sandal trees, etc.

76. The remissions sanctioned during the year amounted to Rs. 48 while the refunds of revenue amounted to Rs. 1,494.

77. There are no perennial blocks on the Mutha Canals, but a proposal to introduce them is under consideration. The area of two

seasonal leases under the canals and that under the Matoba Tank during the year were 270 and 1,708 acres respectively.

78. The cost of the measuring establishment was Rs. 1,473, which gives a rate of about one anna seven pies per acre, against one anna four pies per acre of the previous year. The increase is due to the fact that although the area irrigated was less, the measuring establishment was that normally employed. Unitisation of areas to be irrigated is being systematically enforced on the canals, and as it progresses the cost of measurement may be expected to be gradually reduced.

79. The quantity of water supplied from the Mutha Right Bank Canal to the Poona Cantonment and the Poona City Municipality was 1,006,387,506 and 2,086,888,500 gallons respectively, the corresponding revenue being Rs. 32,204 and Rs. 66,781. The figures for the preceding year were 1,011,254,465 and 1,902,586,400 gallons and Rs. 32,360 and Rs. 60,883 respectively.

Storage works dependent on local rains.

KASURDI TANK.

80. This tank, which had remained empty since 3rd October 1926, received its first small replenishment on the 16th June 1927. It again dried up on the 28th July and remained so up to the 20th September, on which date it received another replenishment. The tank reached its full supply level of 17·46 feet on the 26th September the contents being 7·75 million cubic feet and overflowed on the same date, the overflow lasting for one day only. Water was issued for irrigation of rabi crops and the tank finally dried up on the 26th November.

SHIRSUPHAL TANK.

81. This tank, which had remained empty since 28th December 1926, received its first small replenishment on the 12th June 1927. It again dried up on the 1st September. It received another replenishment on the 12th September and reached its full supply level of 31 feet on the 26th September, the contents being 362·05 million cubic feet. During the year the tank overflowed twice from the 27th September to the 4th November and from the 12th November to the 19th December. Water was issued for irrigation of rabi and two-seasonal crops. The tank did not dry up during the year. The area of two-seasonal leases sanctioned under the tank was about 518 acres.

BHADALWADI TANK.

82. This tank, which had remained empty since 17th December 1926, received replenishment on the 7th June 1927. It reached its full supply level of 35 feet on the 21st September (the contents being 184·67 million cubic feet) and began to overflow from the next day, the overflow lasting for 23 days. Water was issued for irrigation of rabi crops. The tank did not dry up during the year. The area of two-seasonal leases sanctioned was about 900 acres.

83. The sub-joined table shows the results of irrigation, revenue, etc., during the year compared with the average of the past three years :—

Name of Tank	Area irrigated		Assessment		Gross assessment		Working expenses		Realisations		Rainfall	
	1927-28	Average	1927-28	Average	1927-28	Average	1927-28	Average	1927-28	Average	1927-28	Average
	Acres	Acres	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Inches	Inches
Kasurdi ..	37	30	77	74	1,023	644	1,229	1,454	955	668	21·72	7·02
Shirsuphal ..	698	916	4,844	4,504	5,030	5,600	11,540	5,363	3,884	6,320	22·83	13·26
Bhadalwadi ..	1,282	1,021	9,639	3,812	9,682	4,208	5,386	5,849	6,364	2,750	21·75	12·51

The slight increase in the area irrigated from the Kasurdi tank and the consequent increase in irrigation assessment is due to the supply of water being timely for the area applied for. The increase in the gross assessment is due to the fact that the right to cultivate the tank bed fetched a price higher than anticipated. Although the area irrigated from the Shirsuphal tank is less than the average, there is an increase in the irrigation assessment due to the increase in water rates which took effect from the 15th February 1927. The big difference in gross assessed revenue and realisations is due to the fact that there being ample water in the tank due to good rabi rains, land in the tank bed was not available for cultivation. The right to cultivate the tank bed which brought in Rs. 2,400 in the preceding year did not therefore fetch anything during the year under report. The increase in irrigation under the Bhadalwadi tank and gross assessment is due partly to increase in the area irrigated and partly to enforcement of revised water rates with effect from the 15th February 1927. The increase in realisations is due to a larger rabi area having been irrigated during the rabi season of 1926-27 demands for which were realised during the year under report.

PRAVARA CANALS DIVISION.

Works with Ghat Storage.

Godavari Canals.

84. On the 1st April, the level of water in Lake Beale was 47·10 feet above the sill of outlet, the corresponding contents being 3,109·93 million cubic feet. The lowest level of water was 24·80 feet above the sill of sluices on the 16th June, when the first replenishment was received and the waste weir overflowed on the 13th July. The quantity of water stored for irrigation was 7,745·46 million cubic feet, corresponding to a depth of 62 feet of water. The draw-off for irrigation commenced on the 7th January and the level gradually went down to 53·92 feet above the gauge by the 31st March, the contents being 4,522·49 million cubic feet. Seven acres and 24 gunthas of rabi crops were irrigated on leakage water directly from the lake and the irrigation revenue derived therefrom was Rs. 70-15-0.

85. The yield from the catchment of the lake (156 square miles) was 34,306 million cubic feet, the average of the several gauge readings being 100 inches. The rainfall in the canal tract was 26·13 inches. The rainfall was heavy in the months of June, July and September, good in the months of October and November and low in August. As a result the demand for canal water for all seasonal crops was less than usual.

86. The Godavari Right and Left Bank Canals are designed to discharge 384 and 228 cusecs at head, with full supply levels of 7 and 6 feet respectively, and the tail discharges are 114·41 and 35 cusecs with full supply depths of 5 and 3 feet respectively.

87. The following table gives the results of irrigation, revenue, etc., during the year compared with the average of the past three years :—

Name of work	Area irrigated		Assessment		Gross assessment	
	1927-28	Average	1927-28	Average	1927-28	Average
	Acres	Acres	Rs.	Rs.	Rs.	Rs.
Lake Beale ..	471	437	1,945	1,656		
Godavari Right Bank Canal.	16,384	24,951	3,22,125	3,30,941	5,65,077	5,69,425
Godavari Left Bank Canal.	10,432	11,857	2,10,849	1,95,654		

Name of work	Working expenses		Realisations		Rainfall	
	1927-28	Average	1927-28	Average	1927-28	Average
	Rs.	Rs.	Rs.	Rs.	Inches	Inches
Lake Beale ..					....	....
Godavari Right Bank Canal.	3,43,256	3,61,972	6,73,126	4,78,209	24·62	17·97
Godavari Left Bank Canal.					27·24	15·77

The decrease in the area irrigated, irrigation assessment, and the gross assessment on the whole Godavari system is due to less area irrigated in the rabi season owing to timely and favourable rains. The decrease is mainly in the area of seasonal crops, which did not stand in need of any irrigation due to copious and timely rainfall.

88. The refunds of revenue sanctioned during the year amounted to Rs. 225 and remissions to Rs. 568.

89. The cost of measuring establishment amounted to Rs. 838 which works out to 6 pies per acre against 6½ pies per acre in the previous year.

90. There are at present 17,758 acres under perennial blocks on the Godavari Canals. This is the second year of the block system and it was necessary in order that the objects of the system might not be frustrated to enforce the block rules strictly and refuse water to unsuitable lands. This caused some restriction of cane in block areas and also outside block areas, as cane outside block is being gradually eliminated. Owing

to this, and due to poor demand for seasonal crops, later date of draw-off from the Darna reservoir and less demand for new blocks, there was a large balance of water in the reservoir. Attempts were made to encourage irrigators to go in for hot weather fodder crops, pre-seasonal waterings, and for early groundnut and cotton, but the response was disappointing.

PRAVARA RIVER WORKS.

91. The Wilson Dam at Lake Arthur Hill which was started in 1911 has been completed. The catchment area of the reservoir is 47 square miles, and the whole of the catchment is in the Ghats. The Dam which is designed to impound water to a depth of 270 feet is about 1,600 feet long at the top. The Pravara River at this place runs through a narrow and deep gorge which is blocked by the Wilson Dam. At present water to a depth of 260 feet can be impounded which gives a storage of 10,086 million cubic feet. This storage can be increased to 12,092 million cubic feet with a depth of 270 feet by the erection of automatic gates on the waste weir. The construction of both the Pravara Right and Left Bank Canals has been completed and the canals are now in operation.

92. A sugar factory owned by the Belapur Company and situated near the Belapur Railway Station started operations in 1921. The Company's area of sugarcane has risen from 550 acres in 1921-22 to 2,085 acres during the year under report, out of a total area of about 7,400 acres which the Company owns. This is a pioneer scheme and the successful manufacture of sugar is of great importance to the large cane growing interests in the Deccan and to the successful development of the Deccan Canals generally.

93. The designed discharges of the Pravara Right and Left Bank Canals at head are 152·62 and 530·00 cusecs respectively, the full supply levels being 5 and 8 feet; and the designed discharges at tail are 81·79 and 102 cusecs respectively, the full supply levels being 3 feet in both cases.

94. On 1st April the level of water in the Wilson Dam was 164·30 feet above the sill of outlet, the corresponding contents being 4,253 million cubic feet. The lowest level was reached on the 4th July, when the first replenishment was received, and the lake overflowed the waste weir on the 25th July; the maximum depth of flood above the crest of the waste weir was 4·25 feet on the 28th idem. Water stopped overflowing on the 19th October. The water level maintained above the sill of the lowest sluice was 210 feet, representing a volume of 10,086 million cubic feet. The draw-off for irrigation commenced on the 1st November, and by the 31st March the level went down to 173·65 feet above the sill of outlet representing a volume of 5,103·88 million cubic feet. The waste weir at Bhandardara is a surplussing weir, and no gates have yet been installed there. There was no keen demand for canal water owing to timely and abundant rainfall.

95. The run-off from the catchment was 37,917 million cubic feet, the average of rain-gauge readings being 203·41 inches. The year was

an exceptionally good one. The monsoon opened very favourably and the rainfall was timely and in abundance from June to November in the Pravara Canals area, and there was therefore little demand for canal water for the kharif and rabi crops. In the case of sugarcane growers on the canals the year under report was not a good one. The main reason for this was the low rate for gul. The rainfall in the canal tract was 25·41 inches and was evenly distributed.

96. The results of irrigation, revenue; etc., during the year, compared with the average of the past three years, are as under :—

Name of work	Area irrigated		Assessment		Gross assessment	
	1927-28	Average	1927-28	Average	1927-28	Average
	Acres	Acres	Rs.	Rs.	Rs.	Rs.
Pravara Right Bank Canal.	6,624	13,279	1,55,272	1,66,499	6,49,244	6,09,103
Pravara Left Bank Canal, including Lakh Canal.	17,287	26,323	4,79,062	4,28,662		

Name of work	Working expenses		Realisations		Rainfall	
	1927-28	Average	1927-28	Average	1927-28	Average
	Rs.	Rs.	Rs.	Rs.	Inches	Inches
Pravara Right Bank Canal.	3,54,153	2,77,368	8,28,838	5,03,886	24·42	15·21
Pravara Left Bank Canal, including Lakh Canal.					25·98	16·46

The decrease in the area irrigated was due to timely rainfall in the area of seasonal crops irrigated by the canals during both the kharif and rabi seasons. The increase in the gross assessed revenue was due to larger area of cane and the increased water rates for seasonal crops recently introduced.

97. Refunds of revenue sanctioned amounted to Rs. 577. There were no remissions.

98. The cost of measuring establishment amounted to Rs. 713 which gives a rate of 6 pies per acre, the same as in the previous year. With the completion of the unitisation of the area under irrigation, the cost of measurement is expected to be reduced.

NASIK IRRIGATION DIVISION,

Works with Ghat Storage.

CHANKAPUR TANK—GIRNA LEFT BANK CANAL.

99. The Chankapur Dam on the Girna river forms the storage reservoir for the Girna Left Bank Canal. The lake has been in use since 1909-10.

On the 1st April, the water level in the lake was 65·28 feet above the sill of the lowest outlet, the corresponding contents being 510 million cubic feet. The level had fallen to 54·30 feet by the 14th June when replenishment began to be received. Thereafter the level gradually rose to the full supply level of 92 feet on the 29th October, the contents being 1,548 million cubic feet. Draw-off from the storage for irrigation purposes commenced on the 28th November. The level of the lake on the 31st March was 85 03 feet above the sill of the outlet, the corresponding contents being 1,157 million cubic feet. A portion of the supply was also used for feeding the existing bandharas on the Girna river, and for supplementing the supply to the Jamda Canals.

100. The run-off from the catchment of 100 square miles was 3,843 million cubic feet, the average of the rain-gauge readings being 46·56 inches. The rainfall in the canal tract was 25·81 inches. The year was unusual due to good and timely rainfall and consequently the demand for canal water was much less than usual.

101. The area irrigated in excess of the kayam bagayat during the kharif and rabi seasons under the several bandharas on the Girna river and in the bed thereof was 283 acres and the assessment Rs. 2,479, against 326 acres and Rs. 2,013 respectively for the previous year.

102. A comparison of the irrigation, revenue, etc. pertaining to the year under review with the average of the past three years is as under :—

Area irrigated		Assessment		Gross assessment		Working expenses		Realisations		Rainfall	
1927-28	Average	1927-28	Average	1927-28	Average	1927-28	Average	1927-28	Average	1927-28	Average
Acres	Acres	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Inches	Inches
6,132	9,346	51,170	49,338	52,361	50,097	67,923	52,514	39,753	49,204	46·42	43·30

The decrease in the area irrigated is due to timely and good rainfall. The apparent rise in irrigation assessment and gross assessed revenue is due to the introduction of revised water rates.

103. Refunds of revenue sanctioned amounted to Rs. 56. There were no remissions.

104. The cost of measuring establishment amounted to Rs. 543, which gives a rate of 1 anna and 10 pies per acre against 1 anna and 5 pies per acre for the previous year. The high cost of measurement is due partly to the increased cost of labour and partly to the scattered nature of irrigation.

Kadwa River Works.

105. The Waghad Tank is the storage for the Palkhed, Ojhar Tambat, and Wadali Canals. On the 1st April the depth of water in the tank

was 27·40 feet above the sill of outlet, the corresponding contents being 161·74 million cubic feet. The level thereafter went down gradually until it reached 18·70 feet above the sill of outlet by the 12th June, the contents being 73·56 million cubic feet, when the tank began to receive regular replenishment and the height of water rose to the full supply level of 48 feet above the sill of outlet, which is at R. L. 80·00, on the 25th September. The maximum depth of flood above the crest of waste-weir was 8 feet on the 25th September. The automatic waste-weir gates were finally closed on the 6th October, the full supply level being maintained, which is equivalent to a volume of 605·55 million cubic feet. The regular draw-off for irrigation from the storage commenced on the 16th January (a very late date as the normal time is about 1st November) with 46 feet depth of water in the tank, representing a volume of 540·86 million cubic feet. The depth of water fell to 40·05 feet above the sill of outlet on the 31st March, the corresponding contents being 383·17 million cubic feet.

106. The run-off from the catchment of 29 square miles was 3,925 million cubic feet, the average of the rain-gauge readings being 75·44 inches. The rainfall in the canal tract was 28·85 inches on an average. The demand for canal water in both kharif and rabi seasons was much less than usual owing to good and timely rainfall.

107. Thesubjoined table gives the results of irrigation, revenue, etc., during the year compared with the average of the past three years :—

Name of work.	Area irrigated.		Assessment.		Gross assessment.	
	1927-28.	Average.	1927-28.	Average.	1927-28.	Average.
	Acres	Acres	Rs.	Rs.	Rs.	Rs.
Palkhed Canal ..	1,209	2,971	17,283	23,886		
Ojhar Tambat Canal.	716	1,245	10,683	10,790	39,926	46,372
Wadali Canal ..	689	1,260	8,383	8,968		
Waghad Tank ..	....	....	....	....	....	....

Name of work.	Working expenses.		Realisations.		Rainfall.	
	1927-28.	Average.	1927-28.	Average.	1927-28.	Average.
	Rs.	Rs.	Rs.	Rs.	Inches	Inches
Palkhed Canal ..						
Ojhar Tambat Canal.	77,704	48,899	48,523	49,260	71·29	55·63
Wadali Canal ..						
Waghad Tank ..	....	....	....	....	....	....

The decrease in the area irrigated, irrigation assessment and gross assessed revenue was due to timely rainfall and consequent less demand for canal water for kharif crops. The demand for water in the rabi season was also less, as the late rains were sufficient.

108. A refund of Rs. 9 was sanctioned during the year. There were no remissions.

109. The cost of measuring establishment amounted to Rs. 204 which gives a rate of 1 anna 3 pies per acre against 1 anna per acre for the previous year. The comparatively high cost of measurement per acre is due partly to the increased cost of labour and partly to the scattered nature of irrigation.

Storage Works with Deccan Catchment.

Parsul Tank.

110. This small tank depends solely on local rains for its supply and generally stores sufficient water for the monsoon and part of the rabi season.

111. The tank was dry from the 31st December 1926 to the 12th June 1927, when it received the first replenishment and water rose to 35 feet, with a storage of 119·48 million cubic feet on the 21st September. The regular draw-off commenced on the 30th October and the depth of water fell to 25·70 feet above the sill of outlet on the 31st March, the corresponding contents 67·82 million cubic feet.

112. The following table gives the results of irrigation, revenue, etc., during the year compared with the average of the past three years :—

Area irrigated.		Assessment.		Gross assessment.		Working expenses.		Realisations.		Rainfall.	
1927-28.	Average.	1927-28.	Average.	1927-28.	Average	1927-28.	Average.	1927-28.	Average.	1927-28.	Average.
Acres	*Acres	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Inches	Inches
1,512	1,014	8,404	4,042	8,772	4,192	2,234	2,071	2,875	4,876	19·70	11·20

The increase in the area irrigated, and consequently in the irrigation assessment and gross assessed revenue was due to improved supply from the tank for rabi crops.

113. There were neither refunds nor remissions sanctioned during the year.

114. The cost of measuring establishment was 1 anna 10 pies per acre against 1 anna 11 pies per acre for the previous year.

SHOLAPUR DIVISION.

Storage Works with Deccan Catchment.

115. The area irrigated, gross assessed revenue and working expenses during the year for the four tanks in the Sholapur Division as compared

with the average of the preceding three years are given in the following statement :—

Name of tank.	Area irrigated.		Gross assessed revenue.		Working expenses.	
	1927-28.	Average.	1927-28.	Average.	1927-28.	Average.
	Acres	Acres	Rs.	Rs.	Rs.	Rs.
Ekruk ..	3,937	3,854	1,38,425	1,28,043	36,166	20,273
Koregaon ..	403	386	2,235	2,214	2,410	4,349
Ashti ..	4,063	4,013	23,519	28,161	15,044	8,414
Pathri ..	985	1,146	11,945	11,768	3,583	6,819

The increase in the area irrigated under the Ekruk, Koregaon and Ashti tanks was due to better demand for water, while the decrease under the Pathri tank was due to timely and well distributed rainfall in the rabi season.

116. The increase in the gross assessed revenue from the Ekruk tank was due to greater consumption of water by the Sholapur Municipality and higher revenue realised from the sale of right of grazing in the bed of the tank. The increase on the Pathri tank was due to greater consumption of water by the Barsi Municipality. The decrease in revenue in the case of the Ashti tank was due mainly to loss of revenue from the sale of right of cultivating lands in the bed of the tank, as most of the land was submerged at the time it was required for cultivation.

Ekruk Tank.

117. On 1st April the tank registered 29·24 feet of water above the sill of the lowest outlet. The level fell gradually till it reached 26·23 on the 10th June. This level was sufficiently high to provide for two successive bad years and to allow 1,000 acres of kharif (eight months) being irrigated.

118. A replenishment of 7·17 feet was received in the tank between 11th June and 19th November. The total storage available on the 19th November was 1,696·99 million cubic feet representing a height of 33·27 feet over the sill of the lowest outlet. The water available was utilised for rabi crops according to the programme approved for the year. It was also used to meet the demands of the Mills and the Municipality. The waste weir did not overflow during the year.

119. The mean rainfall gauged at the five stations in the catchment of the tank (159 square miles) from 1st May 1927 to 30th April 1928 was 20·56 inches and the total replenishment received in the tank during the period was 1,186·21 million cubic feet.

Koregaon Tank.

120. On 1st April, the level of water in the tank was 6·30 feet over the sill of the outlet. The level fell to 3·25 feet by 19th September.

Full replenishment was received thereafter and the waste weir began to over-flow on 26th September. The storage was fully utilised in meeting the demands of the leaseholders for rabi irrigation.

121. The rainfall gauged at Koregaon was 24·83 inches and the total replenishment received in the tank was 189·17 million cubic feet.

Ashti Tank.

122. On 1st April the level of water in the tank was 11·37 feet over the sill of the outlet. With the replenishments received from May to July, the level rose to 14 feet which increased to 16·67 feet by 13th November. The storage was fully utilised in meeting the demands of the rabi lease-holders and for 8 months kharif crops. The waste weir did not overflow during the year.

123. The mean rainfall gauged at 2 stations in the catchment of the tank was 25·26 inches and the total replenishment received was 718·74 million cubic feet.

Pathri Tank.

124. On 1st April the level of water in the tank was 25·45 feet over the sill of the outlet. The level gradually went down till it reached 22·62 feet on 5th June. Replenishments were received during the months of September and October and the waste weir began to overflow in the first week of October. The supply was utilised in meeting the demands of rabi lease-holders and the Barsi Municipality. The area under kharif crops was only 5 acres owing to insufficiency of water in the season.

125. The mean rainfall gauged at 2 stations in the catchment from 1st May 1927 to 30th April 1928 was 31·18 inches and the total replenishment received was 483·78 million cubic feet.

AHMEDNAGAR DIVISION.

Storage Works with Deccan Catchment.

Bhatodi Tank.

126. This is a small tank situated on the Mehekari river about 12 miles from Ahmednagar. It has a present reduced capacity of about 57 million cubic feet due to silting. It depends entirely on local rains for its supply, which generally suffices for the monsoon and a part of the rabi season.

127. The total rainfall during the year was 26·88 inches as against 19·82, the average of the past three years. The tank received its first replenishment on 15th June. The highest level reached was R. L. 93·60 on 1st October. The tank overflowed for 25 days and dried up on 11th May.

128. The area irrigated, gross assessment and working expenses as compared with the average of the preceding three years were as under :—

Area irrigated.		Total gross assessment.		Working expenses.	
1927-28.	Average.	1927-28.	Average.	1927-28.	Average.
Acres.	Acres.	Rs.	Rs.	Rs.	Rs.
611	676	9,056	8,410	4,871	6,052

EAST KHANDESH DIVISION.

Works without storage but on rivers with Ghat Catchment.

JAMDA CANALS.

129. The source of supply of these canals is the Girna river supplemented from time to time by water from the Chankapur tank. On 1st April, the discharge of the Girna river at Wadgaon above the Jamda bandhara was 4 cusecs which went down to zero on 20th April. The first flood came down the river on 8th June and the highest flood occurred on 17th June, when the depth of water over the crest of the Jamda weir rose to 3·20 feet.

130. The sub-joined statement shows the area irrigated, assessment and working expenses as compared with the average of the preceding three years :—

Area irrigated.		Gross assessed revenue.		Working expenses.	
1927-28.	Average.	1927-28.	Average.	1927-28.	Average.
Acres.	Acres.	Rs.	Rs.	Rs.	Rs.
1,350	1,208	7,621	9,664	10,725	11,630

The increase in the area irrigated was due to better demand for canal water in the rabi season, while the decrease in gross assessed revenue was due to less realisations from the sale of mango fruit and aloe leaves.

Storage Works with Deccan Catchment.

HARTALA TANK.

131. On 1st April there was no water in the tank and it remained dry till 12th July. The maximum water level was reached on 4th October, *viz.*, R. L. 88·30 representing a capacity of 51·82 million cubic feet. The rainfall during the year was 32·26 inches against 20·82 inches of the previous year.

Mhaswa Tank.

132. On 1st April the water level stood at R. L. 141·20, the contents being 37·03 million cubic feet. The level went down to R. L. 133·54 by 4th July, the corresponding contents being 5·55 million cubic feet. The first replenishment was received on 5th July and the maximum level was reached on 2nd October when the water in the tank rose to R. L. 152·00 representing a volume of 172·40 million cubic feet. The rainfall was 21·25 inches against 23·50 inches of the previous year.

133. The area irrigated on the Hartala and Mhaswa tanks, assessment and working expenses as compared with the average of the preceding three years are given in the following statement :—

Name of tank.	Area irrigated.		Gross assessed revenue.		Working expenses.	
	1927-28.	Average.	1927-28.	Average.	1927-28.	Average.
	Acres.	Acres.	Rs.	Rs.	Rs.	Rs.
Hartala tank ..	60	5	735	1,307	902	845
Mhaswa tank ..	551	446	1,767	2,843	1,849	1,712

The increase in the area irrigated under both the tanks was due to greater demand for water in both the seasons.

WEST KHANDESH DIVISION.

Works without storage depending on local rain.

Shahada Channel.

134. The channel is fed by the Gomai river which is perennial. There is no rain-gauge installed at the channel head. The rainfall at Shahada during the year 1927 was 25·87 inches.

135. The following table shows the area irrigated, gross assessment and working expenses as compared with the average of the preceding three years :—

Area irrigated (Jirayat).		Gross assessed revenue.		Working expenses.	
1927-28.	Average.	1927-28.	Average.	1927-28.	Average.
Acres.	Acres.	Rs.	Rs.	Rs.	Rs.
964	694	5,001	4,613	6,607	6,076

The area irrigated under the Patasthal Bagait (under settlement) was 1,022 acres and the irrigation share of the assessment was Rs. 6,157. The water supply was adequate throughout the year.

Works depending on river supply from Ghat Catchment supplemented by a tank with Deccan Catchment.

Lower Panjhra River Works.

136. The source of supply of these works is the river Panjhra, supplemented by the Mukti tank when the supply in the river falls short of requirements.

137. On 1st April the contents of the tank were 0·15 million cubic feet which were reduced to zero before the first replenishment was received on 12th June raising the contents to 73·40 million cubic feet. The full supply level was reached on 14th November when the contents were 320 million cubic feet as compared with the maximum of 151·55 million cubic feet of the preceding year. Observations made when the tank was dry showed that its capacity has been reduced by 4·25 million cubic feet on account of silting.

138. The mean average rainfall gauge in the catchment of the tank at Dahyana and Sadgaon was 28·36 inches.

139. The following table shows the area irrigated, assessment and the working expenses as compared with the average of the preceding three years :—

Area irrigated.		Gross assessed revenue.		Working expenses.	
1927-28.	Average.	1927-28.	Average.	1927-28.	Average.
Acres.	Acres.	Rs.	Rs.	Rs.	Rs.
2,452	2,268	27,965	23,555	14,898	5,659

The increase in the area irrigated and gross assessed revenue was due to unseasonal rainfall in the kharif season and consequent greater demand for water.

SATARA DIVISION.

140. The area irrigated, gross assessed revenue and working expenses for the six works mentioned below as compared with the average of the preceding three years are given in the following statement :—

Name of work.	Area irrigated.		Gross assessed revenue.		Working expenses.	
	1927-28.	Average.	1927-28.	Average.	1927-28.	Average.
	Acres.	Acres.	Rs.	Rs.	Rs.	Rs.
1. Krishna Canal.	6,334	9,544	64,431	66,104	25,706	24,657
2. Rewari Canal.	642	312	2,829	1,535	1,707	2,631

Name of work.	Area irrigated.		Gross assessed revenue.		Working expenses.	
	1927-28.	Average.	1927-28.	Average.	1927-28.	Average.
	Acres.	Acres.	Rs.	Rs.	Rs.	Rs.
3. Upper Man River Works.	1,629	596	6,143	3,332	4,638	11,545
4. Yerla River Irrigation Works.	4,625	5,445	21,281	23,861	81,201	22,404
5. Chikhli Canal.	439	458	1,825	1,504	1,321	845
6. Maini Tank.	2,336	2,086	8,576	10,347	3,987	5,130

The decrease in the area irrigated under the Krishna Canal and the Yerla River Irrigation Works was due to timely and well distributed rainfall in the rabi season, while the increase under the Rewari Canal, Upper Man River Works and the Maini tank was due to greater demand for water in the rabi season owing to failure of rains. The decrease in revenue on the Krishna Canal, Yerla River Irrigation Works, and the Maini tank was due to less demand for water in the rabi season owing to timely and well distributed rainfall. The increase in revenue on the Upper Man River Works and Chikhli Canal was due to unseasonal rainfall in the kharif season and consequent greater demand for water, while that on the Rewari Canal was due to the irrigation of a greater area in the rabi season owing to failure of rains.

River Supply with Ghat Catchment.

Krishna Canal.

141. The rainfall gauged at Retre Budruk was 24 inches against 21·56, the average of the past five years.

142. Owing to good rainfall during the year 1926-27, there was sufficient water in the river to meet the demand in the hot season of 1927-28. The rainfall in the monsoon was not evenly distributed but was seasonal in the rabi season.

Works with Deccan Catchment.

Rewari Canal.

143. The rainfall gauged at Rewari was 26·79 inches against 22·93 inches, the average of the past five years.

144. The supply of water which was "nil" in April increased from June to November and began to go down from November to end of March. Water was supplied to irrigators by rotation and the arrangement was satisfactory.

Upper Man River Works.

145. The rainfall gauged at Gondowla was 19·17 inches against 13·24 inches, the average of the past five years.

146. On 1st April the Pingli tank was dry. The first replenishment was received on 5th June when the level reached to R. L. 2357·09 equivalent to 15·07 million cubic feet. The highest level reached was R. L. 2371·09 equivalent to 154·77 million cubic feet. Water flowed over the waste weir from 3rd October to 1st November.

Yerla River Irrigation Works.

147. The total rainfall gauged at Khatgaon was 25·75 inches against 19·76 inches, the average of the past 5 years.

148. On 1st April the contents in the Nehr tank were 89·26 million cubic feet. The first replenishment was received on 18th September when the water level rose to R. L. 2652·82 equivalent to 114·27 million cubic feet. Further replenishments were received and the tank was full on 10th November, *i.e.*, R. L. 2665·62 equivalent to 395·56 million cubic feet. Water flowed over the waste weir from 10th to 13th November when the R. L. was 2666·02 equivalent to 406·20 million cubic feet. Water was issued to the full lengths of the canals and to all the crops in the villages under command.

Chikhli Canal.

149. The rainfall gauged at Chikhli was 21·90 inches against 14·95 inches, the average of the past five years.

150. On 1st April there was no flow in the river. During the year there were in all three floods, the highest being on 14th September when the height of water reached was 7 feet.

Maini Tank.

151. The rainfall gauged at Maini was 22·75 inches against 14·70 inches the average of the past five years.

152. On 1st April there was no supply in the tank. The first replenishment was received on 12th June when the level of water reached to R. L. 2298·52 equivalent to 6·48 million cubic feet. The level gradually increased till 29th June when the tank was full and the level reached was R. L. 2304·52 equivalent to 95 million cubic feet. The waste weir overflowed from 12th November to 3rd December and the highest level reached was R. L. 2306·06 on 26th September. The supply was issued for all the crops in the kharif and rabi seasons.

DHARWAR DIVISION.

Deccan Catchment.

Muchkundi Tank.

153. The Muchkundi tank is the only first class irrigation work in the Dharwar Division. It depends entirely on local rains. Due to precarious rainfall and the smallness of the catchment area the supply

in the tank is unreliable. The tank was dry from the 1st April to the 2nd August. Thereafter it received some replenishments at intervals, the highest being on the 9th October when the water level rose to R. L. 1789·97. The tank again went dry on the 26th January and the 18th February and remained so till the end of the year.

154. During the year some water was available in the tank which irrigated 11 acres in the rabi season, the amount assessed being Rs. 77. No revenue on account of water rate was realised as there was no irrigation during the previous year. Similarly there were no realisations of water rates assessed on the area irrigated during the year under report. The total assessment including miscellaneous receipts (Rs. 5,025) was Rs. 5,102 while the working expenses amounted to Rs. 2,820. This resulted in a profit of Rs. 2,282 (*i.e.*, a return of 1·43 per cent. on the capital cost of Rs. 1,58,707) against a net loss of Rs. 3,155 in the previous year.

DHARWAR IRRIGATION DIVISION.

Deccan Catchment.

Gadikeri Tank.

155. The lands under this tank are assessed at consolidated rates. The area irrigated during the year and the irrigation share of the land revenue were 407 acres and Rs. 2,356 respectively. There were no miscellaneous receipts. The working expenses amounted to Rs. 310 which resulted in a net profit of Rs. 2,046 equivalent to 12·09 per cent. on the capital cost of Rs. 16,918.

Ghat Catchment.

Gokak Canal.

156. The area irrigated during the year and the assessment thereon were respectively 9,918 acres and Rs. 64,851 against 12,244 acres and Rs. 80,136 of the previous year, and 12,291 acres and Rs. 72,910, the average of the past three years. The decrease is mostly due to the restriction of the rabi cultivation with a view to meeting the demand for water from the Gokak Mills Company.

157. The miscellaneous receipts amounted to Rs. 19,564 against Rs. 20,765 of the previous year. The gross assessment was Rs. 84,415 against Rs. 1,00,848 of the previous year and Rs. 92,569, the average of the past three years.

158. The working expenses during the year amounted to Rs. 13,510 against Rs. 20,953 of the previous year and Rs. 19,288, the average of the past three years. The operations of the year resulted in a net profit of Rs. 70,905 giving a net return of 4·86 per cent. on the capital cost of Rs. 14,66,167.

Deccan Catchment.

Dambal Tank.

159. The lands under this tank are assessed partly at consolidated rates and partly at water rates. The area irrigated and the assessment were 366 acres and Rs. 1,684 respectively.

160. The irrigated area assessed at consolidated rates was 144 acres and the irrigation share of the land revenue was Rs. 916 giving an average water rate of Rs. 6·36 per acre.

161. The total assessed revenue including miscellaneous receipts (Rs. 1,296) amounted to Rs. 3,896 against Rs. 3,980 of the previous year and Rs. 3,923, the average of the past three years.

162. The working expenses amounted to Rs. 715 against Rs. 678 of the previous year and Rs. 724, the average of the past three years. The net result of the year's working was a profit of Rs. 3,181 which gives a return of 4·97 per cent. on the capital outlay of Rs. 63,980.

Medleri Tank.

163. The area irrigated during the year and the assessment thereon were 50 acres and Rs. 575 respectively against 35 acres and Rs. 523 of the previous year and 60 acres and Rs. 658, the average of the past three years. The decrease as compared with the average is due to less demand for water owing to seasonal rains.

164. The total assessed revenue, including miscellaneous receipts (Rs. 305) was Rs. 880. The working expenses amounted to Rs. 2,898 against Rs. 2,566 of the previous year and Rs. 1,532 the average of the past three years. The result of the year's working was a deficit of Rs. 2,018 which was due to the abnormal increase in the working expenses on account of special repairs carried out to the extent of Rs. 622.

Ghat Catchment.

Madag Tank.

165. The area irrigated and assessment were respectively 410 acres and Rs. 1,927 against 423 acres and Rs. 1,923 of the previous year and 510 acres and Rs. 2,260, the average of the past three years. The decrease over the average is partly due to seasonal rains and partly to the apathy of the irrigators to grow on a large scale high rated crops like sugar cane.

166. The total assessed revenue including miscellaneous receipts (Rs. 332) amounted to Rs. 2,259 against Rs. 2,146 of the previous year and Rs. 2,549, the average of the past three years.

167. The working expenses amounted to Rs. 1,950 against Rs. 1,981 of the previous year and Rs. 2,108, the average of the past three years. This resulted in a profit of Rs. 309 which is equivalent to 0·18 per cent on the capital outlay of Rs. 1,67,598.

Deccan Catchment.

Asundi Tank.

168. The lands under this tank are assessed partly at water rates and partly at consolidated rates. The unconsolidated area irrigated and the water rates assessed were respectively 72 acres and Rs. 545. The area under consolidated assessment was 190 acres and the irrigation share of land revenue was Rs. 687, *i.e.*, Rs. 3·62 per acre.

169. The total assessed revenue including miscellaneous receipts (Rs. 564) was Rs. 1,796 against Rs. 1,536 of the previous year and Rs. 1,397, the average of the past three years.

170. The working expenses amounted to Rs. 1,276 against Rs. 1,229 of the previous year and Rs. 1,248, the average of the past three years. This shows a net profit of Rs. 520 giving a return of 0·69 on the capital outlay of Rs. 74,995.

Forest Catchment.

Mavinkop Tank.

171. The whole of the irrigated area (572 acres) is assessed at consolidated rates. The irrigation share of the land revenue was Rs. 1,732 against Rs. 1,730 of the previous year giving a rate of Rs. 3·03 per acre.

172. The working expenses amounted to Rs. 322 against Rs. 324 of the previous year and Rs. 352, the average of the past three years. This shows a net profit of Rs. 1,410 giving a return of 4·21 per cent. on the capital cost of Rs. 33,504.

Ghat Catchment.

Dharma Canal.

173. This canal is fed by the Dharma river. Water was admitted into the canal on the 6th July and the canal ceased to flow on the 29th November. Although the monsoon was not favourable, the distribution of water was judiciously managed to the satisfaction of all the irrigators.

174. The lands under this canal are assessed partly at water rates and partly at consolidated rates. The area irrigated and the assessment at water rates were respectively 401 acres and Rs. 2,692 against 445 acres and Rs. 2,224 of the previous year.

175. The area irrigated at consolidated rates was 5,227 acres, the irrigation share of land revenue being Rs. 20,765, *i.e.*, rate of Rs. 3·97 per acre. The total assessed revenue from all sources, after deducting Rs. 23,156 to be credited to the old work amounted to Rs. 334 (Rs. 23,490—23,156).

176. The working expenses for the year amounted to Rs. 2,212 against Rs. 1,688 of the previous year and Rs. 2,920, the average of the past three years. The result of the year's operations was a loss of Rs. 1,878.

177. The following statement shows the rainfall gauged at the sites of works classed under the head "55" in the Southern Circle during the kharif and rabi seasons of 1927-28 as compared with the figures of rainfall of the previous year and the average of the last ten years :—

Year.		Dharma Canal Yekkambi.	Much-kundi tank.	Dambal tank.	Medleri tank.	Madag tank.	Asundi tank.	Gokak Canal Dhupdal.
		Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.
1927-28.	Kharif..	69·63	8·10	13·02	12·91	15·35	7·65	11·97
	Rabi ..	3·94	4·20	1·60	4·69	2·30	2·15	3·05
	Total ..	73·57	12·30	14·62	17·60	17·65	9·80	15·02
Average of the last ten years.		77·68	12·10	14·47	15·90	24·55	20·07	17·28
1926-27.	Kharif..	93·76	8·92	14·48	12·33	18·72	19·41	15·98
	Rabi ..	6·46	..	0·80	3·58	3·04	1·60	1·20
	Total ..	100·22	8·92	15·28	15·91	21·76	21·01	17·18

These figures show the result of the rainfall gauged at the site of the works and do not represent the rainfall figures on the whole of the catchments.

PART II

COMPRISING IRRIGATION WORKS FOR WHICH NEITHER CAPITAL NOR REVENUE ACCOUNTS ARE KEPT.

GENERAL REMARKS.

178. The whole area of irrigation under, and revenue due from works for which neither capital nor revenue accounts are kept in the Deccan and Gujarat as recorded in the register of these works are 281,193 acres and Rs. 9,11,058 respectively.

179. The following tables give by districts details of area irrigated, expenditure, revenue, etc., in respect of irrigation works on which expenditure was incurred during the year.

TABLE I.

Showing the area irrigated in the different districts in the Deccan and Gujarat and the Consolidated revenue and Water rates assessed and recovered during the year 1927-28 in respect of irrigation works classed under "Works for which neither capital nor revenue accounts are kept" on which expenditure was incurred during the year.

Collectorate.	Number of works.	Area irrigated.	Revenue.			Remarks.
			Irrigation share.	Land share.	Total.	
		Acres.	Rs.	Rs.	Rs.	
Ahmedabad ..	103	7,147	(a)9,576	18,382	27,958	(a) Includes Rs. 653 on account of water rates direct receipts.
Kaira	53	7,970	(b) 25,528	19,570	45,098	(b) Includes Rs.4,851 on account of water rates direct receipts.
Panch Mahals ..	26	2,239	(c)5,596	1,436	7,032	(c) Includes Rs. 4,844 on account of water rates direct receipts.
Surat	36	1,892	4,661	18,855	23,516	
Broach	2	99	161	474	635	
West Khandesh ..	13	1,217	(e) 13,678	2,933	16,611	(e) Includes Rs. 63 on account of water rates direct receipts
East Khandesh ..	2	198	1,775	655	2,430	
Nasik	43	5,540	43,792	11,662	55,454	
Poona . ..	4	830	(g)4,945	966	5,911	(g) Includes Rs. 1,755 on account of water rates direct receipts.
Sholapur ..	1	593	(f) 2,765	..	2,765	(f) Water rates direct receipts.
Satara	..	..	..	..	..	
Belgaum ..	62	4,703	21,849	5,337	26,686	Works in charge of Belgaum and Dharwar Irrigation Divisions.
Dharwar	70	9,566	37,321	9,325	46,646	Works in charge of Dharwar Irrigation Division.
Kanara	28	2,145	4,937	1,234	6,171	
Bijapur	1	14	104	78	182	Works in charge of Belgaum Division.
Ahmednagar ..	1	..	(d) 9	..	9	(d) Water rates direct receipts. Represent recovery of previous years demands.
Total ..	445	44,153	*1,76,197	90,907	2,67,104	Rs. *Direct Receipts. 14,940 Indirect Receipts. 1,61,257 1,76,197

TABLE II

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TABLE

Showing actual expenditure and receipts for the year 1927-28 on the revenue accounts are kept

Collectorate	Expenditure							
	Direct charges							
	Extentions and Improvements	Maintenances and repairs	Establishment	Tools and Plant	Pensionary charges	Total	Share of collection charges	Grand Total
1	2	3	4	5	6	7	8	9
Ahmedabad	2,904	89,380	33,947	3,050	4,752	2,00,351	958	2,13,282
Kaira	7,155	46,044					2,553	
Panch Mahals.	4,785	17,328					420	
Surat	..	28,060	6,027	542	844	37,174	466	37,656
Broach	..	1,701					16	
Thana	..	70	15	2	2	89	..	89
West Khandesh.	..	6,073	1,444	268	202	7,987	1,363	9,350
East Khandesh.	..	339	81	15	11	446	177	623
Ahmednagar.	4,99,803	4,330	1,10,912	22,271	16,788	6,03,104	1	6,03,105
Nasik	1,406	46,026	40,602	1,569	5,684	95,287	4,379	99,666
Poona	700	426	508	18	71	91,700	428	92,128
	31,751	4,307	46,326	1,107	6,486			
Sholapur	..	1,990	473	88	66	2,617	94	2,711
Belgaum	..	20,937	31,511	1,833	4,412	1,16,251	2,135	1,22,052
Dharwar	7,763	31,619					3,762	
Kanara	..	17,756					494	
Bijapur	..	420					10	
Ratnagiri	..	..	..	..	..	..	..	..
Total	5,56,267	3,16,812	2,80,846	30,763	39,318	12,24,006	17,256	12,41,262

II

Irrigation Works in the Deccan and Gujarat for which neither capital nor —referred to in Table I.

Actual Receipts							
Direct Receipts			Indirect receipts share of consolidated revenue	Grand Total Direct and Indirect receipts	Less refunds of Revenue	Gross receipts less Refunds	Remarks
Water rates from Irrigation	Miscellaneous	Total direct Receipts					
10	11	12	13	14	15	16	17
Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	
653	2,571	3,224	8,923	12,147	..	12,147	
4,851	5,397	10,248	20,677	30,925	..	30,925	
4,844	1,677	6,521	752	7,273	..	7,273	
..	..	..	4,661	4,661	..	4,661	
..	..	..	161	161	..	161	
..	..	..	....	..	..	..	
63	36	99	13,615	13,714	..	13,714	
..	..	..	1,775	1,775	..	1,775	
9	4,305	4,314	....	4,314	..	4,314	
..	..	..	43,792	43,792	..	43,792	
1,755	3	1,758	3,190	4,948	..	4,948	
2,765	2,122	4,887	....	4,887	..	4,887	
..	..	..	21,349	21,349	..	21,349	Works in charge of Belgaum and Dharwar Irrigation Divisions.
..	298	298	37,321	37,619	..	37,619	Works in charge of Dharwar Irrigation and Kanara Divisions.
..	..	..	4,937	4,937	..	4,937	
..	..	..	104	104	..	104	Works in charge of Belgaum Division.
..	..	..	....	..	..	..	
14,940	16,409	31,349	1,61,257	1,92,606	..	1,92,606	

DETAILED REPORTS BY DIVISIONAL OFFICERS.

WORKS FOR WHICH NEITHER CAPITAL NOR REVENUE ACCOUNTS ARE KEPT.

Ahmedabad, Kaira and Panch Mahals and Surat and Broach Divisions.

KHARI SLUICES.

180. Due to abnormal rainfall the Khari river continued to flow up to 1st May 1928; the whole of the Khari sluices area was flooded and well saturated and the himayat paying land (*viz.*, 7,238 acres in 11 Kalambandhi villages of Matar Taluka of the Kaira District) was transplanted with rice and came to maturity successfully. Besides, non-himayat paying area of 244 acres was irrigated in these Kalambandhi villages, and also came to maturity.

181. The sluices were maintained in good condition at a cost of Rs. 5,585. Besides this, a sum of Rs. 1,344 was spent in making good the damage done by the heavy floods of 1927.

182. The miscellaneous revenue amounted to Rs. 158 against Rs. 4,021 of the previous year. The decrease was due to the decay of grass caused by heavy floods. Also the high amount of revenue of the previous year was solely due to the sale of a large number of babul trees in that year.

183. The following table compares the area irrigated and assessment levied with the average of the previous three years:—

	Average.		1927-28.	
	Area.	Revenue after deducting remissions.	Area.	Revenue after deducting remissions.*
	Acres	Rs.	Acres	Rs.
I. Irrigation above Kalambandhi villages (of Mahij, Bidaj and Lali).	369	1,772	862	5,172
II. Irrigation from tanks fed by the river Khari—				
Goblaj	433	4,120	326	873†
Galki	376	432	176	1,282
III. Irrigation from the Khari sluices proper (*i.e.*, 10 Kalambandhi villages).	6,429	28,164	5,440	37,818
Total ..	7,607	34,488	7,804	45,145

* The revenue is consolidated.

† Revenue is less due to the large amount remaining unrecovered till the end of the year out of the kharif demand as the assessment papers were sent in March 1928.

184. The assessment under the khari sluices proper (*i.e.*, of the 'Kalambandhi villages') being consolidated, the average rates per acre for land and water respectively were as under :—

	Irrigation share.	Land share.	Total consolidated.
	Rs. a. p.	Rs. a. p.	Rs. a. p.
Government Land	0 8 3	4 4 0	4 13 0
Alienated land	0 8 5	1 6 9	1 15 2

Muvalia Tank.

185. The Muvalia tank is the largest in the Panch Mahals District and is situated in the vicinity of Dohad town. It has a catchment area of about 39 square miles of hilly tract and therefore fills in almost all the years of normal rainfall. As there was abundant rainfall during the year under report, the tank filled to its full supply level, the water having risen to R. L. 139·15. Owing to the abnormally heavy floods on the waste weir, the cushion walls and side walls of the Chambers were overthrown and portions near the high and low level waste weir were eroded. Some damage to the Right Bank Canal, to the pavement of the service road and to the inner slope of the dam was caused by the high waves in the floods of 1927. The damaged portions have been repaired at a cost of Rs. 2,686.

186. The total area irrigated during the hot weather, kharif and rabi seasons was 1,431 acres, and the gross assessment amounted to Rs. 3,415 against 846 acres and Rs. 2,641 respectively, the average for the last three years. The miscellaneous revenue from all sources amounted to Rs. 682 against Rs. 3,867 for the preceding year. The increase of about Rs. 3,200 in the last year was due to water issued to the B. B. & C. I. Railway Company for the construction of Loco. Shops at Dohad. The tank with its dam, canal and distributaries was maintained in an efficient state at a cost of Rs. 4,450.

187. Improvements to one tank in the Ahmedabad and 5 tanks in the Kaira and Panch Mahals Divisions and repairs to 10 tanks in the Ahmedabad, 16 tanks in the Kaira and Panch Mahals and 38 tanks in the Surat and Broach Divisions were executed during the year at a total cost of Rs. 10,145 and Rs. 45,255 respectively.

188. The area irrigated and revenue derived from the old irrigation tanks and bunds were as under :—

Name of Division.	Area Irrigated.	Revenue.		
		Irrigation share.	Land share.	Total net consolidated assessment.
	Acres	Rs.	Rs.	Rs.
Ahmedabad	15,528	21,240	46,964	68,204
Kaira	924	84	1,837	1,921
Panch Mahals	315	864	1,436	2,300
Surat	1,433	4,784	20,981	25,765
Broach	848	1,435	4,560	5,995
Total ..	19,048	28,407	75,778	1,04,185

189. The drainage channels in the Ahmedabad, Kaira and Panch Mahals and Surat and Broach Divisions were maintained in good order at a cost of Rs. 7,292, Rs. 4,420 and Rs. 5,842 respectively.

190. The miscellaneous receipts realised during the year from the old tanks and drainage channels were Rs. 17,234.

Mutha Canals Division.

Khamgaon Tank.

191. This partially completed famine tank received good replenishment due to local rains during the monsoon. However, due to good monsoon in the tract there was no demand for water for monsoon irrigation. All the available supply was issued for irrigation of the rabi area measuring 227 acres, which brought in a gross assessed revenue of Rs. 1,654, the corresponding figures for the previous year being 211 acres and Rs. 968 respectively.

192. The sub-joined table gives the area irrigated and the consolidated assessed revenue for the irrigation works during the year compared with the average of the past three years :—

Period.	Area irrigated.	Net consolidated revenue.		
		Irrigation share.	Land share.	Total.
	Acres	Rs.	Rs.	Rs.
For the year 1927-28 ..	684	4,592	1,126	5,718
Average	678	4,387	1,284	5,671

193. The expenditure incurred during the year on these works was Rs. 30 exclusive of the charges for establishment and tools and plant.

Nasik Irrigation Division.

Khirdi Sathe Tank.

194. The management of this small tank was taken over by this Department on the 15th June 1917. The tank was dry from the 24th November 1926 to the 12th June 1927. Replenishment commenced on the 13th June and the water level rose to R. L. 231·00 by the 2nd October with a storage of 56·12 million cubic feet against the designed storage of 91·05 million cubic feet. The draw-off for irrigation began on the 4th December and the level of water fell to R. L. 224·40 with a storage of 20·39 million cubic feet on the 31st March. The area irrigated during the year was 358 acres, which brought in an irrigation assessment and a gross assessment of Rs. 1,509 and Rs. 1,876 respectively, the figures for the previous year being *nil*, as last year there was no irrigation due to the tank receiving no replenishment.

195. The sub-joined table compares the year's results as regards area irrigated and consolidated revenue, etc., with the average of the past three years :—

Period.	Area irrigated.	Net consolidated revenue (after deducting remissions).		
		Irrigation share.	Land share.	Total.
	Acres	Rs.	Rs.	Rs.
For the year 1927-28 ..	27,920	1,99,837	54,953	2,54,790
Average	25,799	1,72,167	52,349	2,24,516

196. The remissions granted by the Revenue Department during the year on account of inadequate water supply and other causes amounted to Rs. 4,005 against Rs. 35,094 for the previous year. The supply to the various bandharas was good and sufficient in general, due to good late rains. The expenditure during the year on these works was Rs. 37,043 exclusive of the charges for establishment and tools and plant.

East Khandesh Division.

197. The area irrigated and revenue derived from each of the old works are as shown below :—

Name of work.	Area irrigated.	Revenue		
		Irrigation share.	Land share.	Total.
	Acres	Rs.	Rs.	Rs.
1. Patonda bandhara and channel.	129	1,043	481	1,524
2. Toli channel	69	732	174	906
3. Amalner bandhara and channel.	371	2,854	1,151	4,005

198. The expenditure incurred was Rs. 339.

West Khandesh Division.

Talwada Tank.

199. The rainfall gauged at Talwada was 19·57 inches against 10·16 inches of the preceding year. On 1st April there was no water in the tank. The first replenishment was received on 16th June and the contents rose to 12·43 million cubic feet. The maximum storage was 35·92 million cubic feet on 3rd October. The year closed with 14·09 million cubic feet of water in the tank. The expenditure incurred during the year on maintenance and repairs to the tank was Rs. 498.

200. The area irrigated and revenue derived from the old works as compared with the average of the past three years are as under :—

Year.	Area irrigated.	Revenue.		
		Irrigation share.	Land share.	Total.
	Acres	Rs.	Rs.	Rs.
1927-28	9,724	60,458	11,448	71,906
Average	8,275	59,739	11,423	71,162

201. The outlay incurred on these works was Rs. 5,576 against Rs. 5,494, the average of the past three years.

Satara Division.

Sap Bandhara and Borgaon Dam.

202. The total area irrigated during the year was 71 acres and the consolidated assessment was Rs. 1,177. The irrigation share of the revenue amounted to Rs. 707 and the balance of Rs. 470 represented the land assessment.

Sholapur Division.

Wadshivne Tank.

203. On 1st April the level of water in the tank was only 0·21 feet over the sill of outlet. The tank went dry from 6th April to 13th June. The largest replenishment was received in the month of September which raised the level of water to 16·92 feet on the 5th October. The storage was fully utilised in the rabi season. The waste weir did not overflow during the year.

204. The mean rainfall gauged at two stations in the catchment area of 14·5 square miles was 27·63 inches and the total replenishment was 186·98 million cubic feet.

205. The area irrigated was 945 acres against 554 acres, the average of the past three years, showing an increase of 71 per cent., which was due to greater demand for water in the rabi season. The gross revenue was Rs. 4,077 against Rs. 3,186, the average of the past three years.

206. The expenditure on maintenance and repairs was Rs. 1,370 against Rs. 1,368, the average of the past three years.

Dharwar Division.

207. On the abolition of the Bijapur Division from 1st May 1927 out of the 13 second class tanks in the Bijapur Collectorate, nine were transferred to the Dharwar Division and the remaining four to the Belgaum Division. The lands under these tanks are assessed at consolidated rates. The total area irrigated by the nine tanks in the Dharwar Division and the irrigation share of land revenue were 450 acres and Rs. 1,681 respectively against 444 acres and Rs. 1,681, the corresponding figures of the previous year.

Belgaum Division.

208. The following are the details regarding the number of tanks in the Belgaum Division, the area irrigated by them and the irrigation share of the land revenue :—

Number of Tanks.	Name of Collectorate.	Area irrigated.	Irrigation share of land revenue.
		Acres	Rs.
4	Ratnagiri	1,273	4,142
2	Belgaum	25	93
4	Bijapur	14	2,163

Dharwar Irrigation Division.

209. There are about 4,500 irrigation tanks in the Dharwar Irrigation Division which comprises the Dharwar Collectorate and parts of Belgaum and Kanara Collectorates. Most of these tanks have no proper arrangement for waste weir and outlets. Of these 162 tanks were repaired during the year at a total cost of Rs. 62,586.

210. During the year, the area irrigated and the irrigation share of land revenue were respectively 88,150 acres and Rs. 2,75,668 as compared with 88,384 acres and Rs. 3,00,800 of the previous year and 93,488 acres and Rs. 2,99,364, the average of the past three years. The remissions granted by the Revenue Department during the year amounted to Rs. 28,268. The large remissions were due to the failure of rains during the previous year and the consequent insufficient supply of water in the tanks for irrigation purposes.

Revenue Report of Irrigation Works in the Bombay Presidency excluding Sind for 1927-28: Review of —

GOVERNMENT OF BOMBAY.

PUBLIC WORKS DEPARTMENT.

Resolution No. P. 19.

Bombay Castle, 16th September 1929.

Letter from the Superintending Engineer, Northern Circle, No. R.—5, dated 6th October 1928.

Submits the Irrigation Revenue Report for his Circle for 1927-28 together with two statistical statements and makes remarks.

Letter from the Superintending Engineer, Deccan Irrigation Circle, No. 4483, dated 12th October 1928.

Submits the Irrigation Revenue Report for his Circle for 1927-28, and states that the general remarks will follow.

Memorandum from the Superintending Engineer, Irrigation Development and Research Circle, No. 2954, dated 20th October 1928.

Forwards the Irrigation Revenue Report for his Circle.

Letter from the Superintending Engineer, Deccan Irrigation Circle, No. 4836, dated 6th November 1928.

Submits the general remarks for his Circle for 1927-28 and makes remarks.

Letter from the Superintending Engineer, Central Circle, No. R.—5/480-D, dated 9th November 1928.

Submits the Irrigation Revenue Report for his Circle for 1927-28 and states that the general remarks will follow.

Letter from the Superintending Engineer, Southern Circle, No. R.—5/S.C., dated 10th December 1928.

Submits the Irrigation Revenue Report for his Circle for 1927-28.

Letter from the Superintending Engineer, Central Circle, No. R.—5/49, dated 4th January 1929.

Submits the general remarks for his Circle.

Letter from the Accountant General, Bombay, No. Bk.—23-1/2342, dated 27th February 1929.

Forwards two statistical tables in connection with Part II of the Irrigation Revenue Report, Deccan and Gujarat for 1927-28, and reports the figures of total area under Irrigation and total revenue due from works for which neither capital nor revenue accounts are kept.

RESOLUTION.—The Irrigation works dealt with in this report fall into two categories, *viz.* :—

(*i*) Tanks and canals for which capital and revenue accounts are kept ;

(*ii*) Small tanks, bandharas and drainage channels for which neither capital nor revenue accounts are kept.

The works included under (*i*) above are described in detail in Part I of the report. The works mentioned under (*ii*) are small and numerous and a brief general account of them is given in Part II.

2. The year under review was marked by unprecedented rainfall and heavy floods in Gujarat which seriously damaged canals, tanks, roads, railway lines and buildings.

3. The total capital outlay on tanks and canals, for which capital and revenue accounts are kept, up to the end of the year under review was Rs. 9,91,38,143. A sum of nearly Rs. 11 lakhs was spent during the year on the Nira Right Bank Canal project which is practically completed.

4. Excluding an area of 8,843 acres on which consolidated water and land assessment is levied, the area irrigated was 239,379 acres as against 263,321 acres in the previous year showing a decrease of 23,942 acres. The decrease occurred mainly in the Deccan Irrigation Circle and was due to timely and favourable rainfall in the canal tracts.

5. The gross assessed revenue amounted to Rs. 35,11,724 as against Rs. 35,61,623 in the previous year and Rs. 25,67,644, the average of the previous ten years.

6. The unrealised balance at the close of the year amounted to Rs. 18,47,242. A portion of this amount has since been recovered and steps have been taken to recover the balance still outstanding.

7. The working expenses amounted to Rs. 16,01,445 showing an increase of Rs. 70,985 over the figure for the previous year.

8. The resulting net revenue for the year was :—

	Rs.
(1) On the basis of assessment ..	19,10,279
(2) On the basis of realisation	20,62,036

as compared with Rs. 20,31,163 and Rs. 15,03,879 respectively of the previous year.

9. The statement embodied in paragraph 13 of the report exhibits the financial results, based on actual figures, of the more important irrigation works in operation in the Presidency.

gitized with financial assistance from th
Government of Maharashtra
on 22 July, 2017

The Ekruk Tank shows a return of more than 8 per cent. on the capital outlay. The Nira Left Bank Canal including the Shetphal Tank and the Godavari, Mutha and Pravara Canals yielded a return of 6·70, 3·73, 3·67 and 3·36 per cent. respectively during the year.

10. The total area irrigated by works for which neither capital nor revenue accounts are kept was 162,575 acres and the gross revenue obtained was Rs. 6,91,503. The total expenditure incurred on improvement and repair of these works was Rs. 12,41,262.

11. Copies of the report and of this review should be forwarded to the Government of India and the Secretary to the High Commissioner for India.

By order of the Governor in Council,

W. L. C. TRENCH,

Deputy Secretary to Government.

To

The Revenue Department, Secretariat.
The Finance Department, Secretariat.
The Commissioner in Sind.
The Commissioner, Northern Division.
The Commissioner, Central Division.
The Commissioner, Southern Division.
The Settlement Commissioner and Director of Land Records.
The Director of Agriculture.
The Director of Information.
The Chief Engineer, Lloyd Barrage and Canals Construction.
The Chief Engineer in Sind.
All Superintending Engineers of Circles.
The Accountant General, Bombay.
The Executive Engineers in charge of Irrigation Works in the Deccan and Gujarat.
*The Secretary to the High Commissioner for India.

*By letter.

BOMBAY : PRINTED AT THE GOVERNMENT CENTRAL PRESS.